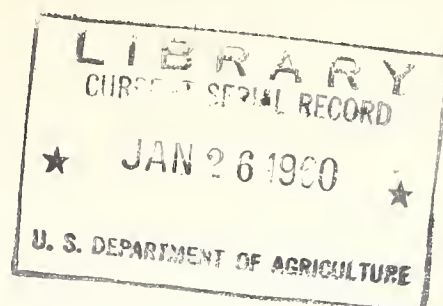


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INVENTORY MANAGEMENT BY SELECTED RETAIL FARM SUPPLY CO-OPS

Area VI- New York, New Jersey, Virginia, West Virginia,
North Carolina, and Georgia

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The Farmer Cooperative Service conducts research studies and service activities of assistance to farmers in connection with cooperatives engaged in marketing farm products, purchasing farm supplies, and supplying business services. The work of the Service relates to problems of management, organization, policies, merchandising, product quality, costs, efficiency, financing, and membership.

The Service publishes the results of such studies, confers and advises with officials of farmer cooperatives; and works with educational agencies, cooperatives, and others in the dissemination of information relating to cooperative principles and practices.

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Highlights and Suggestions

Eleven farm supply and three petroleum cooperatives provided information for this study on inventory management. They were located in New York, New Jersey, Virginia, West Virginia, North Carolina, and Georgia. Data were obtained by personal interviews with local managers.

Practices and Operations

Managers were generally responsible for purchasing supplies. Consideration of past turnover, amount on hand, and time required to get stock from supplier were the principal determinants in reordering.

Carload and pool purchasing along with use of association-owned trucks for plant-to-farm delivery of feed and fertilizer helped minimize inventory costs.

More than half the associations took inventories monthly with the remainder taking them at least quarterly. Good housekeeping and accurate checks of incoming items were believed essential in avoiding shrinkage or shortages.

Special efforts to increase volume included expanded use of newspaper advertising and addition of field-

selling personnel. Quantity and seasonal discounts and incentive programs also boosted volume.

Regional cooperatives were credited with providing help in inventory management by furnishing advertising media, reporting selling techniques, and calling attention to stock status.

Distribution volume for the farm supply associations ranged from \$397,000 to \$1,353,000. Almost 60 percent was feed.

Volume in the petroleum associations ranged from about \$292,000 to \$526,000 with gasoline accounting for nearly 72 percent of the total.

All retail associations studied were financed to some extent and managed by wholesale cooperatives. In general the regional wholesale cooperatives recommended the local inventory policies and practices adopted by the affiliated locals. Thus there was considerable uniformity in the inventory operations of locals affiliated with the same wholesale. Such differences as prevailed largely reflected differences in the policies of the various regionals and the individualities of the respective managers or the persons responsible for inventory management.

Total retail sales were 37 percent above those 5 years ago. Inventories averaged 32 percent higher than 5 years earlier. Feed accounted for about 30 percent and fertilizer and seed combined amounted to 21 percent of total inventory.

Year-end inventories were about 92 percent of average quarterly inventories in the farm supply co-operatives and 99 percent in the petroleum associations. March inventories were highest for petroleum associations with the farm supply associations high in September. June was lowest for the supply associations and September was low for the petroleum group.

Total inventories were turned 15 times. The high three associations in total turnover had more than double the turnover of the low three; but the top three had less than half as much of their assets used for inventories. In 9 farm supply associations feed inventory was turned an average of 31 times and in 5 associations, fertilizer 34 times. Seed in five associations and other supplies in nine associations each turned six times. "Other supplies" accounted for 49 percent of total inventories, however, compared with 19 percent of total sales.

Suggestions for Better Inventory Management

Studies have shown that a good job of managing inventories is related to a continuing review of practices coupled with determined efforts to make improvements. Management should appraise its inventory operations periodically--directing attention to the following considerations:

1. Recognize Your Patrons' Needs.--Keep abreast of demands for new products and of different uses for old ones resulting from impacts of agricultural technology. Understand the total agriculture served by your association as to type, status, and trends. Make farm contacts and patron surveys and keep close contact with the Extension Service and its recommendations.

2. Know Your Merchandise.--Maintain acquaintance with stock by records and visual inspection. Review inventory periodically for items of stock to be reduced or eliminated and consider other items that might be stocked. In addition to quantity and quality of merchandise, know its location and turnover rate.

3. Keep Adequate Records.--Maintain records of inventory and sales by commodity groups. The degree of breakdown will vary with associations. Inventory volume and turnover rates for major commodity groups cannot be determined without detailed records.

4. Watch Inventory Costs.--It costs to carry inventory. Interest, shrinkage, obsolescence, and insurance are the principal costs. Post-season discounts often are more economical than year-to-year carryovers. Specialty items may lead to overstocking. Consider patron advance orders when stocking new items.

5. Utilize Facilities Fully.--Appraise use of storage and display facilities frequently. A change of location or shift in size of display may be worthwhile. Make fast-moving items readily available to patrons. Mechanized equipment should be used to minimize stock handling.

6. Develop Support of Employees.
--Employee performance is tied in with knowledge of job and responsibility. See that the essentials of each job are described and that each employee understands his responsibilities. Discussions with em-

ployees about inventory problems will increase their awareness of inefficiencies and opportunities for improvement. Management of inventories in present-day cooperatives has developed into more than a one-man job.

Inventory Management By Selected Retail Farm Supply Co-ops

Area VI — New York, New Jersey, Virginia, West Virginia, North Carolina, and Georgia

By John M. Bailey

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Purchasing Division

The functions of a retail farm supply cooperative are to purchase, receive, store, and distribute supplies to patrons. The manner in which each of these functions is performed has much to do with the efficiency of the farm supply operation. Inventory management involves the activities associated with these supply services; thus inventory management is an important aspect of operating a successful retail business.

Distributors of farm supplies require adequate facilities and stocks of goods to meet production needs of patrons. The variety of supply items required in farm production expands each year and the capital requirements for facilities and inventory increase accordingly. Between 20 and 25 percent of total assets may commonly be required for inventory purposes. The manner in which this capital is used has much to do with operating efficiency.

This places considerable responsibility on management in securing efficient use of facility and inventory capital in addition to determining the type, quantity, and quality of commodities to handle.

Purpose and Method of Study

This study is the sixth and last in a series Farmer Cooperative Service is making of inventory management by general farm supply cooperatives in various geographic areas of the United States. It en-

deavors to do the following:

1. Determine purchasing policies and practices that favorably affect inventory acquisition;

NOTE: Appreciation is expressed to officials of the farmer cooperatives who provided information on their credit operations, and to J. Warren Mather, Chief, Farm Supplies Branch, Farmer Cooperative Service, for assistance in planning and developing this study.

2. Ascertain successful practices for storing and controlling inventories and reducing shrinkage in merchandise;
3. Determine principal sales methods affecting inventory turnover, especially those for slow-moving merchandise; and
4. Recommend successful standards and methods for inventory management.

A review of the inventory practices of the cooperative selected for study should be helpful to other associations with similar overall operations.

This study included 14 local associations in New York, New Jersey, Virginia, West Virginia, North Carolina, and Georgia--designated as Area VI. Wholesale cooperatives suggested names of local affiliates considered comparable in type of diversified supplies handled and superior in inventory practices. Farmer Cooperative Service selected the participating locals. The data presented throughout this study, therefore, do not necessarily reflect the conditions prevailing as to inventory control in the area as a whole. They do give some indication, however, of the nature and extent of inventory problems

existing among those associations arbitrarily selected as being strong in managing inventories.

The associations were selected on the basis that their management of inventories was better than average. Criteria for judging such operations included: (1) Inventory turnover ratios; (2) overage and shortage data; and (3) evaluation of inventory acquisition and control practices in the local cooperatives by district fieldmen and department heads of the regional associations. All of these associations also were included in a companion credit study.¹

General managers of the selected associations provided information for the study through personal interviews.

All associations in this study were financed to some extent and managed by their affiliated wholesale association. In contrast to the other areas, these associations were under more supervision and generally followed business practices established by the wholesales. These local cooperatives received services such as auditing, accounting, and supervisory aids from their regionals. In the case of inventory, each wholesale recommended policies and practices that were generally followed by the locals within its area.

Acquiring Inventories

Many inventory problems may be minimized or eliminated by the wise purchase of farm supplies, with special attention given to kind and amount. A description of some of the procurement practices of the associations in this study will provide a better

understanding of the data presented and also help other cooperatives appraise their own operations.

¹Bailey, John M. Credit Control in Selected Retail Farm Supply Cooperatives--Area VI. Gen. Rpt. 71, Farmer Cooperative Service, U.S. Dept. of Agri.

Responsibility for Purchasing

Managers were responsible for purchasing supplies in all of the associations but three. Assistant managers did the purchasing in two of these three associations, with department heads making the purchases for the remaining association. In five of the associations, the individual responsible for purchasing was assisted by others in the organization. Employees at one association added items to a "want" list and a fieldman assisted with fertilizer and spray items at another.

In determining new lines to carry, managers relied most heavily upon advice from their wholesale, followed by reliance on requests of patrons and managers' own opinions. Department heads and boards of directors were also listed as important in helping to make these decisions. In three associations, surveys of members' wants served as a basis for making new selections of merchandise to handle.

Managers of 12 associations considered that acquaintance with stock--including past turnover, amount on hand, and time required to get stock from supplier--was the principal determinant in reordering merchandise. Six associations used a check list. Three associations used inventory cards with two of these handling predominantly petroleum products. Three associations considered fieldmen helpful. A manager of a general supply association reported that inventory cards had once been used at his location, but they were considered too expensive to maintain. One manager listed the promotion of seasonal

items by regional associations as an important cause for periodic changes in his total inventory.

Procurement Methods

Associations employed a variety of purchasing practices to minimize the volume of inventories, thus helping to hold unit costs at low levels. Many associations made carload and full-truck orders of feed, fertilizer, seed, petroleum products and building supplies.

Eight of the associations specifically reported the use of pooling with other cooperatives as a means of reducing costs of inventory. Only two associations used consignment purchasing for holding down inventory, with some feed being handled this way in one and equipment in another. Patrons' orders were taken at four associations for items like tires, hardware, building supplies, and equipment.

Managers of four associations reported that the use of association-owned trucks was very helpful in giving better control of the quantity of inventory on hand at any given time. Factors reported as most satisfactory in reducing the average quantity of inventory included closeness to source of supply, pick up of feed and fertilizer direct from mill or plant, discount on car or truck lots, and pooling. In one petroleum association, the manager believed it beneficial to take advantage of oil and grease offers made by the regional. This program permitted quantity lots to be moved to farms at reduced prices, thus minimizing the holding of inventory by the association.

Source and Amount of Supplies

The cooperatives in this study were able to obtain the bulk of their inventories from their regional cooperatives. Some seeds, animal health feed concentrates, and miscellaneous hardware supplies were the only items listed as being obtained from sources other than cooperative channels. Seldom was more than 20 percent of these products bought outside of cooperative sources. Only one manager reported any duplication of items because of purchasing from other than cooperative sources, and in this instance the duplication was only slight.

The variation in the number of day's supply of commodities reported as normally carried in inventory follows:

<u>Commodity</u>	<u>Day's of supply range</u>
Feed	5 to 14
Fertilizer	3 to 30
Seed	20 to 90

Available storage space was most often mentioned as the determining factor in size of normal inventory. Distance from supply was mentioned as an important consideration at five associations.

Storage space and distance from supply need to be considered together. An association with a short-haul distance from a source of supply could operate with a comparatively small storage area and would be less likely to mention storage space as the most limiting factor. On the other hand an association some distance from its wholesale source of supply would be apt to list storage space as a more significant factor.

Only one manager reported a restriction in inventory size because of a shortage of capital. The principal items affected by this shortage were building supplies and broiler supplements.

Maintaining Inventories

After an inventory has been acquired, attention must be given to stock control. This includes systematic receiving routine, keeping adequate stock records, and proper care of physical stock. Periodic counting of stock is important because it involves organizing inventory and observing its location and condition. Also, orderly housekeeping and efficient facility layout aid in improving stock control.

Inventorying

Eight associations took inventories each month; five made quarterly in-

ventories; and one took an inventory each 45 days. In two associations that inventoried monthly, however, building and broiler supplies were taken quarterly. Duplicate copies of inventory reports were made in all the associations studied. Boards of directors did not assume any responsibility for taking inventory in any of the associations.

One manager who took inventories quarterly believed this period ideal because it helped to locate errors, while more frequent intervals were thought too costly. One manager reported that the central office personnel of the regional provided as-

sistance in inventorying in connection with making an audit.

Pricing of inventories was done on the basis of cost or market figures, whichever was lower, in 10 associations. One of these, however, priced hardware at cost. Three managers reported using cost figures while one manager used market figures. Inventory pricing was done by managers in seven associations and by one assistant manager in one. In all others pricing was done at the central office of the regional wholesale association.

Shrinkage

None of the associations considered shortages as important factors in accounting for differences in inventory. Managers reported that good housekeeping and accurate checks of incoming items were the most important factors in avoiding shrinkage or shortages. All associations used some form of paper transaction to take care of stock items used in internal operations. This procedure consisted of either writing a regular sales ticket or charging the merchandise to the department concerned.

Moving Stock

The ultimate objective of a supply cooperative is to get needed supply items into the hands of patrons. The practices employed to do this have considerable bearing on inventory size, turnover, and control.

Distribution Method

Inventory turnover can be improved by reducing inventory in relation to sales or by adopting aggressive plans to increase volume. Managers of nine associations reported that they had taken specific action to increase sales within the last 2 years. These added sales efforts took the form of advertising and personal calls.

In advertising, one local used an ad plate provided by its wholesale organization while two others had substantially increased their use of newspaper advertising over the 2-year period. Two associations had fieldmen that devoted some of their time to making new contacts and presenting sales programs to farmers. In an oil association, truck

operators (known as farm servicemen) were expected to make at least two calls on non-patrons each week.

Eight associations used price reductions or special quantity discounts to increase sales. Feed and fertilizer were the principal commodities for which this type of program was adapted. Reduced prices were principally made on a quantity discount basis.

Incentive programs, in operation at six associations, were designed to encourage employees to increase sales volume by a particular amount over that of the year previous. Feed was the most common item used in this incentive or quota program. Some associations gave incentive payments for any increases in sales of feed and fertilizer.

Delivery from the wholesale's mill or plant direct to the farm was mentioned by three managers as a means to increase sales. Feed and fertilizer were the only items included in this type of program.

Preseason sales and early delivery programs for fertilizer and seed were used in eight associations. The extent of the use of these programs depended considerable upon the merchandising programs of the regional associations.

Managers' opinions of the methods thought most satisfactory for increasing volume included incentive bonuses, early season discounts, quantity discounts, and personal field selling programs. The emphasis on these programs was quite general and, in most instances, the managers who favored a certain program were already using this program and therefore reported satisfaction upon the basis of experience.

Slow-moving Items

Keeping an adequate stock of goods suited to patrons' needs is a constant problem of farm supply cooperatives. Occasionally purchase of some items are made at the wrong time or in amounts above local demands. It is one problem to recognize items that may become "white elephants" in inventory and another to provide stocks of adequate variety and quantity for patrons needs.

No special techniques were reported for spotting slow-moving items. Visual inspection and general acquaintance with stock and inventory records were reported as the principal means for recognizing slow-moving items. Three associations

dated merchandise when received so that at any time the stock on hand could be appraised for age.

All but two associations promoted special sales to move slow items. Paint, appliances, building supplies, and tires were the items most often mentioned as requiring special moving sales. Avoidance of specialty items was stressed by one manager as a means of reducing slow-moving stock. Spring and fall sales were held with good success at another association. The slack winter season was considered the best time for special sales by one association.

Wholesale cooperatives generally maintained various types of programs to help local associations move slow or unwanted items. Programs sponsored by regionals included: (1) trading items with other locals in the immediate vicinity, (2) assistance of district manager in making exchanges, and (3) return of items to the regional at a 10 percent discount.

In effecting a transfer between locals, a form indicated a short or long stock status. This was circulated to local managers for them to check commodities that were available to them or to check items in inventory that could be used elsewhere. One wholesale, through its district representative, sponsored an auction of slow-moving items for all stores in the area. The auction was well advertised and the results were satisfactory in helping keep a "live" inventory.

Inventory Assistance by Regional Cooperatives

In all but three of the associations surveyed, managers credited regional wholesale associations with

providing help to improve retail inventory management. While no single activity of the wholesale was recog-

nized as the most important, some associations gave their wholesales more credit for assistance than others. It was apparent in this study that much of the assistance recognized by local cooperatives depended upon the local manager and his willingness and desire to accept regional programs.

Regular visits of district representatives were mentioned specifically as very helpful in aiding with inventory management. Also, one manager reported the value of whole-sale-conducted training schools for showing new lines of merchandise and programs for servicing of equipment.

The main techniques of regional cooperatives reported as helpful to

locals in inventory management were as follows:

<u>Techniques</u>	<u>Number of associations reporting benefits</u>
Calling attention to status of stock	5
Mentioning improved practices	4
Suggesting new lines to carry	5
Furnishing advertising displays	10
Reporting successful selling techniques	6
Assistance with slow-moving items	8

Sales Volume and Type of Supplies Handled

Farm supply volume for 11 associations in this study ranged from a low of \$397,086 to a high of \$1,353,493 for the 1957-58 fiscal year (table 1). Six associations had volumes of less than \$600,000. The supply volume of eight associations with comparable data had increased about 37 percent over the 1953-54 volume.

Feed was the most important item from a dollar volume standpoint, accounting for about 59 percent of total volume (figure 1). Feed represented over half of total volume in 8 of the 11 associations and ranged from a low of 41 to a high of 74

percent of volume. Fertilizer and seed combined for all associations made up about 22 percent of total volume. For seven associations with separate volume records for fertilizer and seed, the fertilizer proportion was about double that of seed, with 15 and 8 percent of total volume, respectively.

For three associations handling only petroleum products, volume ranged from \$291,882 to \$526,500 (table 1). About 72 percent of total volume was gasoline, and about 23 percent was fuel oil. Lubricating oils, greases, and miscellaneous related products accounted for the remaining 5 percent of volume.

Table 1 --Total supply volume and proportion of total in selected commodity groups in 11 local farm supply and 3 petroleum cooperatives in the Middle Atlantic Region, 1957-58

Association code	Sales	Proportion of total volume by commodity group				
		Feed	Fertilizer	Seed	Fertilizer and seed ¹	Other
<u>Farm supply associations</u>		<i>Percent</i>				
1	\$433, 288	60	17	8	--	15
2	425, 639	51	17	13	--	19
3	424, 365	59	17	8	--	16
4	416, 849	48	27	9	--	16
5	917, 896	65	8	5	--	22
6	397, 086	41	12	9	--	38
7	511, 851	67	7	5	--	21
9	693, 695	74	--	--	19	7
10	669, 662	45	--	--	33	22
13	726, 723	71	--	--	16	13
14	1, 353, 493	<u>66</u>	<u>--</u>	<u>--</u>	<u>16</u>	<u>18</u>
Average		59	15	8	21	19
<u>Petroleum associations</u>		<u>Gasoline</u>	<u>Fuel oil</u>		<u>Other</u>	
		<i>Percent</i>				
8	\$ 526, 500	70	24		6	
11	329, 240	77	18		5	
12	291, 882	<u>70</u>	<u>26</u>		<u>4</u>	
Average		72	23		5	

¹ Fertilizer and seed volume combined.

Inventory Operations

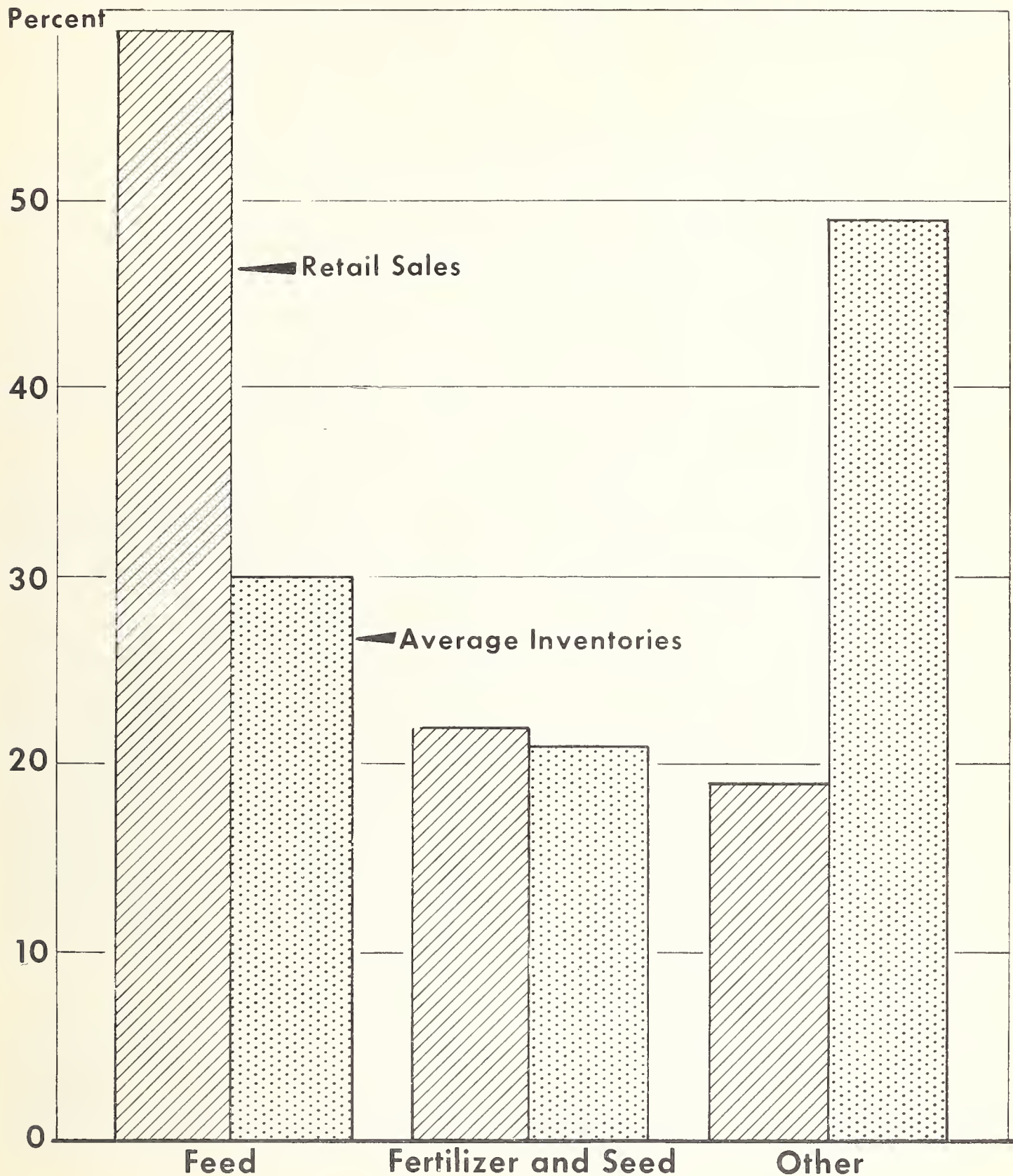
Inventory operations can be considered from many angles. The following analysis emphasizes inventory size, quarterly fluctuations, turnover, and costs.

Size

Farm supply inventories in 1957-58, based on an average of quarterly inventories, ranged from a low of

Figure 1

Proportion of Retail Sales and Average Inventories by Commodity Groups in Farm Supply Cooperatives, Middle Atlantic States, 1957-58



\$24,029 to a high of \$120,632 in nine associations (table 2). Inventories at the close of the 1957-58 fiscal year averaged 32 percent higher than 5 years earlier. This increase in inventory size was in line with increases in sales of 37 percent for the same period. Quarterly inventory volumes are discussed further in a later section of this report.

Feed inventory accounted for about 30 percent of total quarterly inventories in 1957-58. Fertilizer and seed in five associations made up about 8 and 17 percent, respectively, with other farm supplies making up 49 percent of total inventory.

While feed represented only 30 percent of inventories, its contribution to sales volume was almost twice as important, accounting for 59 percent (figure 1). In contrast, "other" farm supplies that made up 49 percent of inventory accounted for only 19 percent of sales volume.

Petroleum inventories varied considerably by type of commodity for individual associations; but the commodity averages for three associations varied only slightly, with gasoline, fuel oil, and "other products" accounting for 37, 28, and 35 percent of total inventories, respectively (table 2).

Quarterly Fluctuations

Nine farm supply and three petroleum associations had quarterly inventory figures for the 1957-58 year (table 3). Year-end inventories were about 92 percent of average quarterly inventories in the farm supply associations. March and September inventories were largest, averaging

102 and 108 percent, respectively, of the quarterly average.

For the petroleum associations, year-end inventories were about 99 percent of average quarterly inventories. Inventories were largest in March and lowest in September, averaging 109 and 96 percent, respectively, of the quarterly average inventory.

Turnover

A measure commonly used to judge inventory management is the number of times inventory is turned in a year. When turnover is 12 times a year, stock is turned once a month. At that rate, 30 days' supply of merchandise is carried in stock based on 360 days a year, or 25 days' supply based on 300 selling days a year.

Turnover is usually measured by dividing inventories into the cost of goods sold. The use of cost of sales is more accurate than sales because inventories are commonly carried at cost or near cost and, therefore, both figures are unaffected by markups. Also, average monthly inventories give a more typical picture than year-end inventories because the latter usually are lower than those at any other time of the year. Sales figures by commodities, however, were available in more associations than the cost of goods by commodities. Therefore, turnover figures discussed in this section have been based on total sales and average quarterly inventories.

Turnover data in associations in this study were limited because volume and inventory figures were often maintained in just three commodity groupings. Feed was the only item

Table 2. --Average inventories and proportion of total in selected commodity groups in nine local farm supply and three petroleum cooperatives in the Middle Atlantic Region, 1957-58

Association code	Average inventory	Proportion of inventory by commodity				
		Feed	Fertilizer	Seed	Fertilizer and seed ¹	Other
<u>Farm supply associations</u>		<i>Percent</i>				
1	\$25,065	23	6	22	--	49
4	37,278	16	7	17	--	60
5	59,067	27	19	16	--	38
6	30,418	17	3	15	--	65
7	33,617	24	4	15	--	57
9	24,029	58	--	--	17	25
10	96,404	29	--	--	20	51
13	61,930	44	--	--	12	44
14	120,632	<u>33</u>	<u>--</u>	<u>--</u>	<u>16</u>	<u>51</u>
Average		30	8	17	16	49
<u>Petroleum associations</u>	<u>Average inventory</u>	<u>Gasoline</u>	<u>Fuel Oil</u>		<u>Other</u>	
			<i>Percent</i>			
8	\$47,018	31	46		23	
11	8,288	35	16		49	
12	13,838	<u>46</u>	<u>22</u>		<u>32</u>	
Average		37	28		35	

¹ Fertilizer and seed inventories combined.

reported separately by all the farm supply associations. However, turnover for feed and total volume may be useful for purposes of comparison.

For feed, the average turnover in nine farm supply associations was 31 times (table 4). There was considerable variation among the associations, ranging from a low of 11 times to a high of 45 times. Both

extremes in turnovers had particular circumstances affecting turnover. The association with the highest turnover was able to distribute about 90 percent of its feed by direct delivery, thus holding feed inventory to a low level. The association with the lowest feed turnover included feed grains purchased and stored for use in mixing operations.

Fertilizer and seed data were re-

Table 3. --Variation in quarterly inventories shown as a percentage of the quarterly average in nine local farm supply cooperatives and three petroleum cooperatives in the Middle Atlantic Region, 1957-58

Association code	Months				Range	
	March	June	September	December	Low	High
<u>Farm supply associations</u>						
	<i>Percent</i>					
1	120	114	85	81	81	120
4	88	86	115	110	86	115
5	82	84	119	115	82	119
6	91	83	139	88	83	139
7	91	92	119	99	91	119
9	138	75	105	82	75	138
10	112	118	78	92	78	118
13	99	91	117	93	91	117
14	<u>98</u>	<u>83</u>	<u>95</u>	<u>124</u>	<u>83</u>	<u>124</u>
Average	102	92	108	98	92	108
<u>Petroleum associations</u>						
8	99	102	93	106	93	106
11	129	100	95	76	76	129
12	<u>98</u>	<u>94</u>	<u>99</u>	<u>109</u>	<u>94</u>	<u>109</u>
Average	109	99	96	97	96	109

ported separately by five associations. Their fertilizer turnover averaged 34 times and seed turnover 6 times a year. Both commodities were combined in one group in four associations and their average turnover was 18 times. "Other" farm supplies, which included items handled in addition to feed, fertilizer, and seed, had a turnover of 6 times. The range for total inventory turnover was from a low of 7 to a high of 29 times, with an average of

15. The association with the highest turnover had about 74 percent of its volume in feed and only 7 percent in the "other supplies" category.

Turnover of petroleum products varied considerably by association and commodity, ranging in total turnover from 11 to 40 times. Turnover of the "other petroleum products" category was uniformly low in contrast to the wide extremes in turnover of gasoline and fuel oil.

Costs

Rate of turnover is important in the cost of carrying inventories. With a charge of 6 percent for funds used in inventory, interest alone would represent more than one-half of estimated costs. In addition to interest on capital in inventory, other carrying costs include: (1) Loss and

damage in storage; (2) obsolescence; and (3) insurance and taxes.

Based on a 10 percent cost estimate, an association with annual sales of \$100,000 would have carrying and maintenance costs of \$140 a year for 5 days' supply of inventory.

In terms of turnover, 5 days'

Table 4. --Inventory turnover¹ for selected commodity groups in nine local farm supply and three petroleum cooperatives in the Middle Atlantic Region, 1957-58

Cooperative code	Commodity groups					
	Feed	Fertilizer	Seed	Fertilizer and seed ²	Other supplies	Total
<i>Turnover (times per year)</i>						
<u>Farm supply associations</u>						
1	45	50	6	--	5	17
4	34	40	6	--	3	11
5	38	6	5	--	9	16
6	32	50	8	--	8	13
7	43	24	6	--	6	15
9	37	--	--	32	8	29
10	11	--	--	12	3	7
13	19	--	--	15	3	12
14	<u>22</u>	<u>--</u>	<u>--</u>	<u>11</u>	<u>11</u>	<u>11</u>
Average	31	34	6	18	6	15
<u>Petroleum associations</u>	<u>Gasoline</u>	<u>Fuel oil</u>	<u>Other</u>	<u>Total</u>		
				<i>Turnover (times per year)</i>		
8	25	6	3	11		
11	87	45	4	40		
12	<u>32</u>	<u>26</u>	<u>3</u>	<u>20</u>		
Average	48	26	3	24		

¹ Based on total sales and average quarterly inventories.

² Turnover for fertilizer and seed combined.

supply of inventory would mean stock was turned 72 times a year; 10 days would mean a turnover of 36 times; 15 days, 24 times; 20 days, 18 times; and 30 days, a turnover of 12 times a year.

An association with a turnover of 6 times would have about a 60-day inventory on hand. The cost of this size inventory for \$100,000 of sales would be about \$1,680.

A recognition of the costs connected with low turnover should include efforts to improve inventory operations.

The three supply associations in this study with the highest total inventory turnovers, averaging 21 times, had an average of 13 percent of their total assets in inventory (table 5). The three associations with the lowest turnover, averaging 10 times, had about 28 percent of all assets in inventory. The high three associations had more than twice the inventory turnover of the low three; but the top three had less than half as much of their assets used for inventories. This indicates the importance of high turnover in achieving good utilization of inventory capital.

Table 5. -- Inventory turnover¹ and proportion of assets in inventory in nine farm supply and three petroleum cooperatives, Middle Atlantic Region, 1957-58

(Arranged on basis of turnover)

Association code	Inventory turnover	Proportion of assets in year-end inventories
	<i>Times per year</i>	<i>Percent</i>
<u>Farm supply associations</u>		
9	29	13
1	17	15
5	16	10
7	15	16
6	13	11
13	12	23
4	11	20
14	11	35
10	<u>7</u>	<u>30</u>
Average	15	19
<u>Petroleum associations</u>		
11	40	14
12	21	21
8	<u>11</u>	<u>9</u>
Average	24	15

¹ Based on total sales and average quarterly inventories.

Table 6. --Measures of inventory operations in retail farm supply cooperatives in six areas of the United States

Item	Area					
	I	II	III	IV	V	VI
<u>For 5-year period studied¹</u>			<i>Percent²</i>			
Increase in farm supply sales	12	20	30	21	28	37
Increase in farm supply inventories	12	12	28	25	28	32
<u>For last year of study¹</u>						
Percent of total assets in inventories at end of year	18	26	20	21	16	20
Inventory turnovers ³			<i>Times per year²</i>			
Feed	20	(4)	12	13	18	31
Seed	8	(4)	12	14	12	6
Fertilizer	23	33	4	8	26	34
Petroleum	23	41	15	17	4	24 ⁵
Building supplies	4	(4)	(4)	4	(4)	(4)
Farm machinery	3	1	(4)	2	(4)	(4)
Tires, batteries, accessories	(4)	4	2	2	(4)	(4)
Hardware	(4)	3	(4)	3	(4)	(4)
Other supplies ⁶	6	5	2	3	7	6
Total	11	9	6	8	15	15 ⁷
			<i>Number</i>			
<u>Associations in each study</u>	8	9	20	23	8	14

¹ Periods covered were: Areas I and II - fiscal years ending 1952 through 1956. Area III - calendar years ending 1952 through 1956. Areas IV and V - fiscal years ending 1953 through 1957. Area VI - fiscal years ending 1954 through 1958.

² Simple averages were used to give approximately equal weight to the performance of each cooperative.

³ Not comparable for all areas. The basis on which turnovers were computed for individual commodities were: Areas I and VI - annual sales and average quarterly inventories. Area II - total sales and average monthly inventories for five associations. Areas III and IV - cost of goods sold and year-end inventories. Area V - total sales and average of 5 to 12 inventories a year for 7 associations.

⁴ Data were not available; included in "other supplies" if handled.

⁵ For three petroleum cooperatives.

⁶ Items in this group are not comparable in each area.

⁷ For nine farm supply associations.

Area Comparisons

Comparative measures of inventory operations for six areas covered in this and previous reports appear in table 6. Data were not available for sales and inventories of identical commodities or groups of commodities and for inventories at the same intervals during a year. Hence the measures are not entirely comparable. Footnotes at the end of table 6 indicate some of the variations. The accompanying tabulation provides the report number, area, and respective States covered for each study.

It should again be emphasized that the data included in these comparisons are for the limited number of associations covered in the studies for each area and do not necessarily reflect areawide conditions. However, on the basis of the data presented and other information available to FCS, the following observations are made with respect to Area VI: (1) Increases in farm supply sales and inventories for the 5-year period studied exceeded all

other areas, with sales and inventories up 37 and 32 percent, respectively; and (2) turnover of feed was highest, at 31 times a year. Fertilizer turnover of 34 times was highest but it represented the average of only five associations.

<u>Report number</u>	<u>Area</u>	<u>States</u>
General Report 38	I	Indiana, Ohio, Michigan, Pennsylvania
Service Report 37	II	Washington, Oregon, Idaho, Utah
General Report 50	III	Wisconsin, Minnesota, North Dakota, South Dakota, Northern Iowa
General Report 66	IV	Kansas, Nebraska, Iowa, Illinois, Missouri
Service Report 39	V	Tennessee, Alabama, Mississippi, Arkansas
General Report	VI	New York, New Jersey, Virginia, West Virginia, North Carolina, Georgia

Other Publications Available

The Story of Farmers' Cooperatives, Educational Circular 1.

Organizing a Farmer Cooperative, FCS Circular 18.

Inventory Management by Selected Retail Farm Supply Co-ops. Area I - Indiana, Ohio, Michigan, Pennsylvania, General Report 38. John M. Bailey.

Inventory Management by Selected Retail Farm Supply Co-ops. Area III - Wisconsin, Minnesota, North Dakota, South Dakota, Northern Iowa, General Report 50. T. R. Eichers.

Inventory Management by Selected Retail Farm Supply Co-ops. Area IV - Kansas, Nebraska, Iowa, Illinois, Missouri, General Report 66. T. R. Eichers.

Integrated Petroleum Operations through Farmer Cooperatives, General Report 58. Anne L. Gessner and J. Warren Mather.

Delivering Feed in Bulk. FCS Circular 3. Lacey F. Rickey.

Bulk Distribution of Fertilizer and Lime in the Northeast. General Report 24. Warren K. Trotter.

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